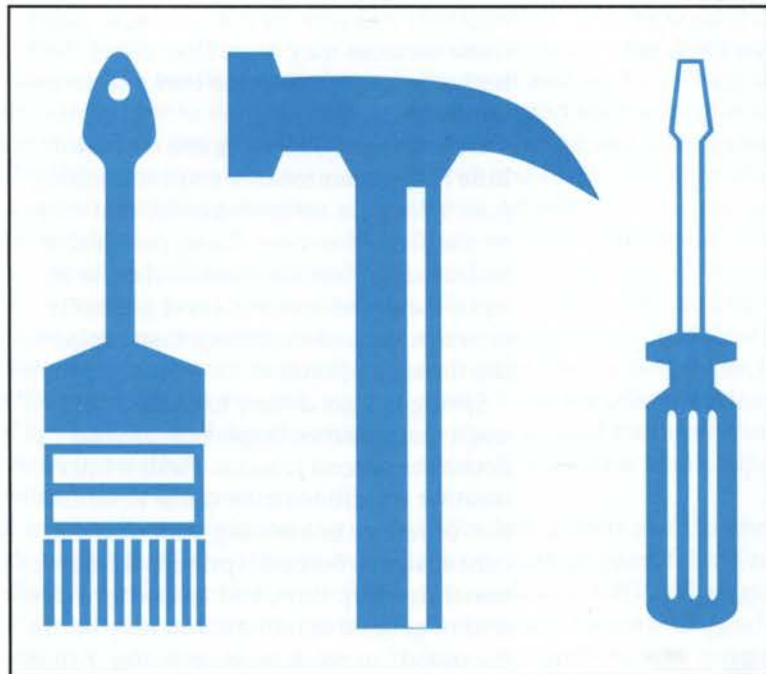
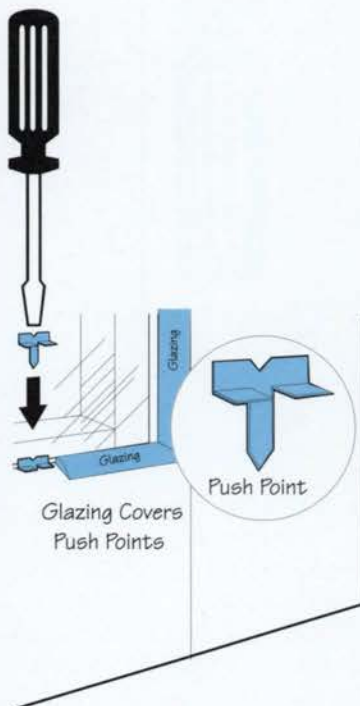


# Maintaining the Home



*The purpose of this publication is to discuss the general areas where home maintenance is needed and to present an organized program for that maintenance.*

*The information contained in this publication was produced by the School of Architecture—Building Research Council (BRC) at the University of Illinois at Urbana-Champaign. For a set of 27 Council Notes for \$29.95 call 1-800-336-0616.*



*Replace broken window glass using push points and glazing compound.*

## MAINTAINING THE HOME

Home owners have long strived for the "maintenance-free" house, but even with many recent material advances, this goal has remained a dream. Products that never wear out may not benefit us as much as we may believe because appliances and mechanical systems, for example, become technologically obsolete during the life of the house and should be replaced before they wear out.

High-quality materials do affect the amount and frequency of maintenance and therefore its cost. When selecting a product, consider both the initial cost and the anticipated maintenance costs. For example, plastic-surfaced window sash and siding cost more, but the savings you will gain by not having to paint these surfaces may more than offset their higher prices, turning the cost into an investment.

Unfortunately, many home owners do little about maintenance until something goes wrong. In some instances, that may be justified. However, doing preventive maintenance usually extends the life of equipment and materials and generally proves to be less expensive than replacing these components.

Spring is a good time to make a thorough maintenance inspection of your house for several reasons. First, winter weather conditions may cause deterioration or failure in building materials and joint sealants. Second, spring is a traditional clean-up time, and following a period of general inactivity, you may be "in the mood" to work on your house. Fall is another good time to schedule an inspection, particularly if the summer weather was severe. Seasonal equipment—lawn mowers, snow blowers, etc.—requires inspection, lubrication, and repair. Also be sure to make special inspections after severe winds, rains, ice, and snow storms.

## STRUCTURAL MAINTENANCE

Water is the cause of more premature failures and deterioration of building materials than any other single element. The penetration of moisture—vapor, water, or ice—into your house can cause paint fail-

ure, discoloration, decay, foundation failure, masonry cracking, and many other problems. Moisture can enter your home from the exterior as rain or snow, from below as either liquid or vapor, or from within as vapor produced by cooking, bathing and other activities. It is very important to check the house thoroughly for all symptoms of moisture damage.

## Foundation

If subterranean termites are a problem in your area, inspect the perimeter of your house annually for termite tubes, damage to wood, and other signs of infestation. If your house is on a crawl space or a basement, the examination should include the inside surfaces of the foundation and the floor framing. Frequent observation is desirable if you live where heavy infestations occur.

The ground around your house should be graded so that there are no low places or "pockets" where water can collect against the foundation. Settlement often occurs around newly constructed homes due to settlement of the backfill. Water that pools against the foundation walls can seep into your basement, crawl space, or under-slab air ducts. Downspout extenders and splash blocks force rain water to flow away from your foundation. See the illustration on page 3.

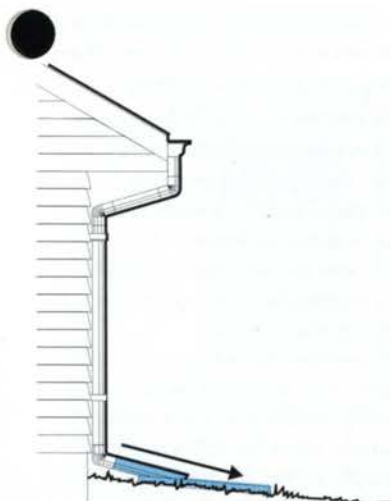
Examine basement walls from the inside for signs of dampness or water stains. Materials are available to repair basement walls from the inside; however, serious water penetration should be repaired from the outside. This is a major undertaking and should be done by a qualified waterproofing company.

## Doors and Windows

Inspect all your doors, windows, and related trim for chipped or peeling paint, and look for cracked or loose caulking around frames and trim. Check for cracked glass and loose or missing putty when you do this inspection. Where replacement is required, use a modern glazing compound rather than putty. Loose or missing putty will permit water to enter and cause decay of wood sash.

Inspect insect screens in the spring. Screens accumulate dirt and insects and should be brushed, washed, and rinsed.





Use downspout extenders and splash blocks to force rain water to flow away from the house.

Inspect door locksets, door closers, hinges, window operators, and all other moving parts for adjustment and smooth operation, and lubricate them as needed. Floor tracks of sliding doors should be cleaned and waxed. Support rollers or hangers may need adjustment to allow the door to operate easily and close tightly.

Clean and install your storm windows in the fall. Double glazing is important because it reduces or eliminates condensation on the inside surface of glass. Condensation on windows can run down and ruin the finish or cause decay of wood window sash and sills. Also check weatherstripping at doors and windows for damage and to make sure it fits snugly.

### Exterior Walls

Because masonry is a brittle material, it is particularly susceptible to damage from the freezing water that has penetrated the wall. For this reason, repair any cracks or loose or crumbling mortar joints immediately.

Inspect all painted surfaces thoroughly for peeling or cracked paint and normal wear and spot paint as required. The length of time between repainting will vary with the type of paint you use, your method of application, and the exposure of the surfaces to weather.

It is possible that only a portion of your house will need to be repainted at any one time depending on how rain, snow and sun affect the paint on each wall. For example, if you live in a climate where the sun is intense, you may have to repaint the south or west walls more frequently than if you lived elsewhere. Be somewhat cautious about repainting because doing so before it is necessary may result in excessive paint build-up which can cause peeling failure.

Window sills are subject to severe exposure to sun and rain. Normally, the bottom of the roof overhang will not need to be repainted as often as vertical surfaces that are exposed to rain or sun. Even this will vary, however, depending on the protection offered by shade trees and overhangs. Shade provided by roof overhang helps prevent surface deterioration by sun and rain.

While checking for paint failure, it is a good idea to inspect wood surfaces for damage, including cracking, splitting, and decay. Damaged material should be replaced and the condition that caused the damage corrected. Check all trim and siding for tightness of fit. Nails may be loose and may need to be reset.

### Roof

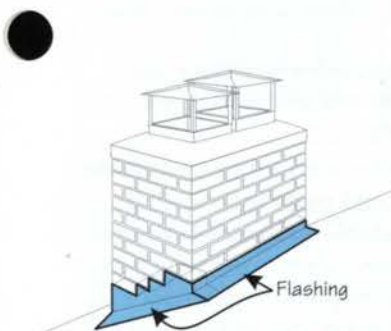
Inspect the roof carefully for leaks, which are often very difficult to locate. If there is access to the underside of the roof, you may see trouble spots by looking for water stains or dampness.

Check the roof surface for damaged or loose shingles, and trim tree branches that can rub against your roof when covered with ice. Trees should be trimmed so they will not rub the roof even when coated with ice—that is when they sag the most and tend to scrape the roof. Also, inspect the flashing at chimneys where roofing and siding meet and at vents and flues. The supports for TV antenna, air conditioners, and any other roof-mounted equipment should be checked for damage to the roof surface.

While on the roof, test antenna guy wires for tightness, and clear bird nests and other obstructions from flues and vents. Look for other problems such as damage around masonry chimneys, particularly at mortar joints, caps, and washes.

Blocked gutters and downspouts are a major cause of paint failure and decay of the fascia and soffit. When gutters or downspouts become clogged, overflowing water finds its way to joints in fascias and soffits. Accumulations of leaves will wick water out of the gutter onto the roof, roof sheathing, and fascia. This is why you should regularly clear gutters, gutter strainers, and downspouts of leaves and debris. Gutters receive severe exposure and may require occasional painting. Factory primed or painted gutters are recommended instead of galvanized gutters if they are to be painted. Aluminum gutters hold paint well and do not rust.

On flat roofs, the joints between lengths of the metal gravel stop at the roof edge and pull loose due to expansion and contraction of the metal.



The flashing is the metal material next to the chimney or the rubber material next to the vents on the roof. Use plastic roof cement to fix gaps between flashing and chimney and flashing and vent.



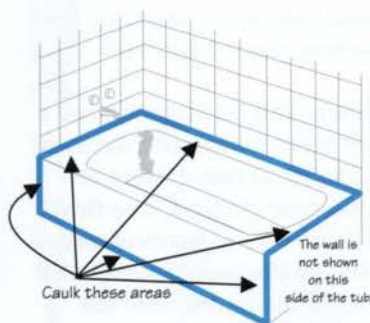
These joints should be resealed periodically.

### Interior Surfaces

Most interior maintenance is a matter of repairing and refurbishing. However, in houses where excessive moisture is present, extensive damage can occur. In climates where there are long periods of low humidity, excessive dryness may cause shrinking and splitting of some material and loosening of glue joints. A humidifier or a dehumidifier may be useful in regulating the moisture level. However, carefully analyze any moisture problems before using such equipment because living habits vary from family to family and your family may add enough moisture to your home through cooking, bathing and other activities.

All painted and natural-finished surfaces should be inspected for coating failure and damage. Check flooring materials for wear and damage, particularly where one material meets another as where carpet meets resilient flooring, or carpet meets wood. Normally, carpet is installed slightly higher than the adjoining material because it is thicker, thereby causing premature carpet wear at these locations. These areas should be protected by a metal or plastic edging. Doors dragging on the carpet will cause wear patterns.

Inspect grouting and caulking in joints in damp locations for damage or failure, and inspect the caulking between the bathtub and wall carefully as well as the caulking around sinks and lavatories that are built into counter tops. Some types of caulking become brittle with age and are then useless as water seals. New caulking in such locations should be a long-lasting resilient material such as silicone or latex sealant.



**Caulk the areas shown to prevent water damage to walls and floors.**

### MECHANICAL SYSTEMS

For many maintenance operations, it is necessary to know certain basic information before repair work can begin. It is difficult or impossible to repair a leaking faucet when you do not know where the water supply shut-off valve is located. You will not be able to purchase a fan belt or a faucet washer without knowing

the size and number of the original item. If this type of information is known, then such minor repairs become routine.

*The following items should be located and marked where necessary. All adult occupants should know the location of these items:*

- ▲ Electrical Main Switch, if there is one.
- ▲ Electrical Distribution Panel, which should contain an itemized list of all lighting, receptacles, and equipment connected to each circuit.
- ▲ Electrical switches for equipment located away from main electrical panel, i.e. air conditioning condensing units (outside).
- ▲ Water supply valve for entire system.
- ▲ Water supply valves for each plumbing fixture. (A valve enables the home owner to make repairs on individual fixtures without turning off the water supply for the entire house.)
- ▲ Clean-out plugs in sanitary waste lines. A clean-out is usually located at the end of each major branch line. In some communities, a clean-out is located in the main building drain just beyond the edge of the house.
- ▲ Septic tank, distribution box, and leaching field, if there is no sanitary sewer system.
- ▲ Gas supply valve for entire system.
- ▲ Gas valve and pilot light on each gas appliance.

Keep a file for warranties, guarantees, instructions, and parts lists on all installed or portable equipment. You will gain experience in knowing which items require more frequent maintenance than others. It is a good idea to keep a supply of replacement parts on hand, such as washers for faucets, fuses, and a fan belt—if needed—for a forced air heating and cooling system.

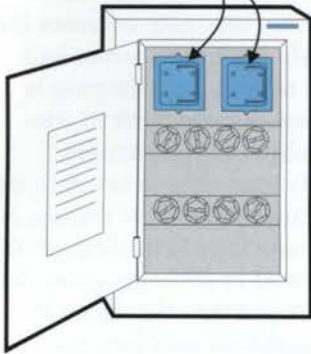
You can do much of the repair and maintenance related to mechanical systems if you have the "know-how." However, some work should be done only by a qualified service representative. In many communities it may even be illegal for the home owner to do certain work, such as electrical rewiring or certain plumbing repairs.

### Electrical System

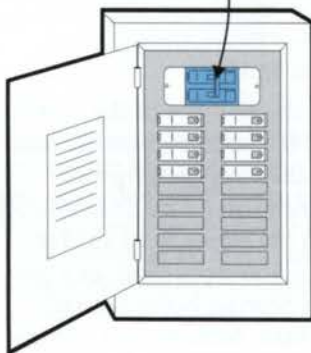
Lamp cords, extension cords, and plugs should be inspected periodically and replaced at the first sign of wear or damage. Exposed wiring (i.e. in garage, unfinished basement, etc.) should also be



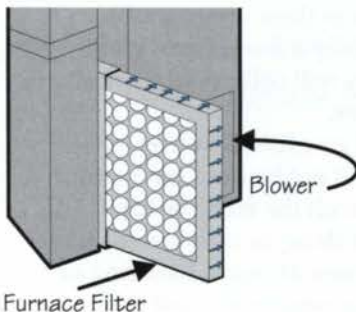
Pull out both cartridges to shut off all power to house



Push main breaker switch to off position to shut off all power to house



Make sure you know how to shut off the power to the house.



The arrows on the furnace filter should point toward the blower. The blower is the motor that is located behind the access panel on the furnace.

checked and replaced at the first sign of damage. Replace switches and receptacles immediately when malfunction or damage occurs.

If fuses blow or circuit breakers trip frequently, contact an electrician to determine the cause of the problem and to make necessary repairs. Disconnect and replace or repair any appliance that gives a shock—no matter how slight—before using it again.

Although repairs to cords and sockets are within the ability of most home owners, electrical repairs involving changing circuits, adding outlets or making connections within the service should be done only by an experienced electrician.

### Heating and Cooling System

The heating system should be checked in the fall and the cooling system in the spring by a qualified service representative. Checks of compressors, pumps, motors, and adjusting of pilot lights, bonnet thermostats and other devices within the system should be done only by a service representative.

In a forced-air heating and/or cooling system, the blower and motor must be protected from dirt and dust. For this reason, filters are located in the return-air side of the blower unit. Change or clean the filters at least twice a year and perhaps as often as once a month, depending on how frequently the system is used and how much dirt and dust is in the air. Clogged filters will not allow enough air to flow past the heat exchanger or the cooling coil for them to heat and cool properly. Check filters monthly to determine their condition. The Record of House Maintenance (see page 7) will then establish an anticipated frequency for change.

Clean the furnace room, air supply and return grilles, and ducts with a vacuum cleaner insofar as possible.

The blower, blower motor, or hot water circulating pump motor should be oiled twice a year unless they have sealed bearings. The owner's manual will show how much and what type of oil to use. Unless specified otherwise, bearings on electric motors should receive two or three drops of oil once or twice per year.

Check fan belts and pulleys (if any) for wear and proper tension.

The air conditioning condensing unit, which is usually located outside the house, should also be cleaned. The grille and coils collect insects, dirt, and trash, and should be brushed and hosed as needed.

The evaporator coil, which is usually located inside the house in the heating and cooling unit, functions as a dehumidifier as well as a cooling element. Therefore, it condenses water which collects in a pan beneath the coil and is conducted to a drain. This drain line can easily become blocked and may require periodic cleaning to remove dust and algae. Overflowing water during cooling is a symptom of this condition.

*If air conditioners are installed in windows, they should be removed and stored for the winter season because:*

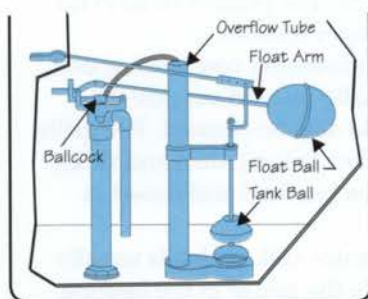
- ▲ cold air from the outside leaks both around and through the unit creating drafts and discomfort;
- ▲ window and sill decay can occur unnoticed around the unit if it is left in place permanently; and
- ▲ maintaining the unit is more convenient if it is taken out of the window.

The air conditioning unit should be cleaned thoroughly, and the blower motor should be lubricated if required. Check the unit for rusting and spot paint as required. Window air conditioners also have filters which should be checked frequently. Plastic foam filters can be washed in warm water and detergent. Metallic filters should be washed and re-coated with a product available for that purpose. Fiberglass filters are disposable and should be replaced.

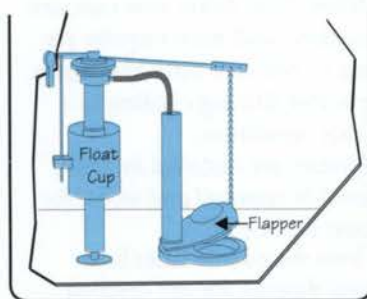
Most manufacturers recommend that outdoor portions of air conditioning units should not be covered during the off season, since the units are designed to be weather-resistant, and a watertight cover can trap moisture within the unit.

If a dehumidifier is used, check it for algae growth and rust, and clean and dry it thoroughly. Also oil it according to the instructions in the owner's manual. Algae can be removed with household chlorine bleach. Spot paint all rusted areas. Check humidifiers for calcium de-

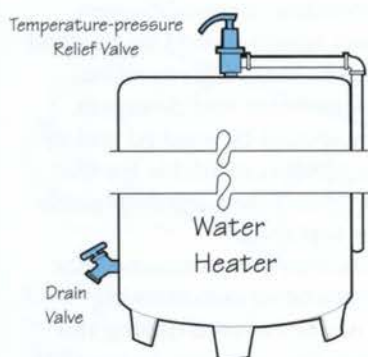




Older toilet tank system



Newer toilet tank system



Drain sediments from the drain faucet and check to see if the temperature-pressure relief valve is working by pushing down on the lever until the water flows freely.

posits. The evaporator plates or wheels may require replacement.

Do not use the furnace or boiler room as a storeroom for flammable materials.

### Plumbing System

**All** faucets, hose bibbs, and other valves should be checked for leaks.

Water closet flushing systems are frequent wasters of water. Remove the top of the flush tank periodically to check its operation. If the water level is up to the overflow, either the float has become waterlogged or the ballcock is leaking. This can be checked by raising the float arm to see if the water flow stops. To check the tank ball, add a small amount of food coloring to the contents of the flush tank. Check an hour or so later, and if water in the toilet bowl has become colored, the tank ball should be replaced.

Moisture condensation on the outside of the flush tank is best controlled by installing a mixing valve which adds some hot water to the filler line. A kit containing foamed plastic insulation for the inside of the tank is also available as are factory-insulated tanks. A special drip pan can also be used.

The pressure relief valve located near the top of the water heater should be opened periodically to see that it is in operating condition. Also, approximately three gallons of water should be drained from the water heater every three or four months to remove any sediment that may have accumulated in the bottom of the tank. If either of these valves have not been opened in some length of time, they may not seal properly when closed and a new washer may be required.

If municipal or private sanitary sewers are not available, the sewage disposal system of the house will probably include a septic tank.

*The frequency of cleaning required by the septic tank depends on:*

- ▲ the size of the tank,
- ▲ the flow of sewage to it, and
- ▲ the method and conditions of disposal of the tank overflow.

As long as the active working space between the scum and sludge is adequate to decompose sewage by bacterial action, the tank does not have to be cleaned. The

tank does not need to be pumped because it is filled—the tank is always full.

The tank should be inspected every year or two. When the space between the scum and the sludge becomes one-half the total depth of the tank, pumping is advisable. A two-chamber tank of adequate size should not need pumping more frequently than once in seven to ten years. If inspection shows raw sewage at the outlet, the tank should be cleaned. If the tank is allowed to fill to the point that sludge is discharged into the disposal field, the disposal field may become plugged and have to be replaced.

A record of inspection and maintenance should be kept. It is also a good idea to map the location of the septic tank and its inspection tiles, and the disposal lines, with measurements from fixed points.

### Grounds and Yard

Depending on the severity of the winter in your area of the country, outside hose bibbs—unless they are freeze-proof—and water lines should be drained each fall. Also drain the water from garden hoses and clean and store them in a protected location. Storing hoses on reels protects them from damage that can occur if they are left on a floor or on the ground. Some plastic hoses become brittle in cold weather and cannot be used during the winter.

Clean and repair areaways, window wells, storm drains, and their outlets. Areaways and window wells should be checked frequently during the fall because drains in these areas can be clogged by only a few leaves. Wind-blown leaves will collect quite rapidly in such locations.

Service all gasoline-powered equipment that will not be used for a season in accordance with the manufacturer's directions, and drain or stabilize the fuel. In the fall, check all snow handling or snow melting equipment and ready it for service. Snow removal is made easier by coating the snow shovel with wax or silicone.

The winter is a good time to clean and repair garden tools and equipment. Remove dirt and rust and coat surfaces with oil, silicone, or wax. Sand or refinish

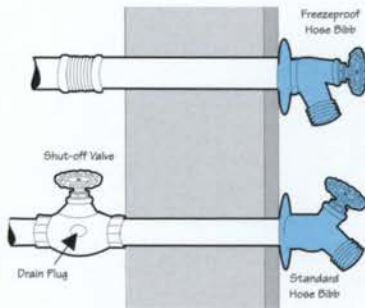


splintered or rough wood surfaces, such as gardening tool handles.

Spray guns can become clogged with chemical residue from pesticides and weed killers if you don't clean them after each use, and a spreader may be corroded by fertilizer if it is not cleaned after each use. Check the expiration dates on leftover chemicals. Those that are to be saved should be stored in a cool, dry, locked cabinet. Store flammable chemicals and paints in a special metal cabinet.

Inspect all paved surfaces, such as concrete and asphalt driveways for cracks, settlement, and for soil erosion adjacent to these surfaces. Asphalt surfaces are susceptible to deterioration from gasoline and oil spills and from water if adequate drainage is not provided. If you are contracting for the sealing of an asphalt drive, be sure to choose a reputable contractor. Cracks in concrete surfaces should be thoroughly cleaned and repaired with patching compounds that will bond to existing concrete.

Inspect all wood structures, including fences and gates, for termite attack and decay. When replacement becomes necessary, use a durable species of wood, such as redwood, cypress, or black locust. Wood that will be imbedded in the ground or in concrete should be pressure-treated.



Make sure your outside bibbs (faucets) are turned off at the shut-off valves and that the water is drained from the water line if you live where there is a possibility of freezing temperatures over the winter months.

## PERMANENT RECORD OF MAINTENANCE

You will find it valuable to keep a record of the following maintenance details:

- ▲ Dates on which each job was done, so you will know when to check for wear or damage again;
- ▲ Frequency of work to be done, so that you may check off what you have accomplished and have a reminder of what you need to do;
- ▲ Costs of each job, so that you will be able to budget for future maintenance, and
- ▲ The person who did the maintenance, so that you will know who to call if you have problems with the work, or if something else needs to be repaired or maintained.

When you are the one doing the job, it is important to note the materials that were used and where they were purchased, so you will have this information on hand for future repairs and maintenance.

If you are moving into a new house, ask the builder to leave extra floor tile, ceiling tile, wall covering, and similar materials for repairs. This is particularly important for materials in which changes occur frequently, such as floor coverings.

## RECORD OF HOUSE MAINTENANCE

Description of Work	Repairs By	Date	Cost
<i>Termite Treatment</i>	<i>Bugs-Bee-Gone</i>	<i>8-21-92</i>	<i>\$400</i>
<i>Outside Painting</i>	<i>S &amp; S Painting</i>	<i>6-14-93</i>	<i>\$1600</i>
<i>Kitchen Faucet Diverter</i>	<i>Ajax Plumbers</i>	<i>9-23-95</i>	<i>\$50</i>

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Material in this publication by:

Robert Wanslow with revisions by Henry Spies

Editor: Karen Grieves

Graphic Arts: Selah Peterson  
Illustrations: Selah Peterson

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## MAINTENANCE CHECK LIST

The frequency of inspection and service given in the chart reflect the *minimum* amount of time and service your house and various household appliances will require. Items may need to be checked more often or at other times depending on the number of occupants, types of materials, local conditions, household pets, and other variables.

### FOUNDATIONS AND BASEMENT

	Spring	Fall	Annually	As Required
Inspect for signs of termite infestation.			✓	
Check grading to assure that water will drain away from the foundation.			✓	
Check basement or crawl space for dampness and/or leakage following wet weather.			✓	

### DOORS AND WINDOWS

Check doors, windows, and trim for finish failure.	✓			
Check glazed openings for loose putty.	✓			
Check for broken glass and damaged screens.	✓			
Check and lubricate window hardware.			✓	
Check weatherstripping for damage and tightness of fit.	✓	✓		
Check caulking at doors, windows, and all other openings and joints between dissimilar materials (i.e. wood-masonry).	✓			

### EXTERIOR WALLS

Check masonry for cracks and loose joints.	✓			
Check painted surfaces for paint failure.	✓			
Check siding and trim for damage or decay.	✓			

### ROOF

Check for damaged or loose shingles, blistered roofing, etc.	✓			
Check underside of roof where accessible for water stains or dampness.	✓			
Check for damaged flashing.	✓			
Check for damaged gutters, downspouts, hangers, strainers, and rust.	✓			
Clean gutters and downspouts.				✓
Sweep debris from flat and low slope roofs.			✓	
Evaluate roof for future replacement.			✓	
Check vents, louvers, and chimney caps and housings for bird nests, etc.	✓	✓		
Check fascias and soffits for paint failure and decay.	✓			
Check antenna guy wires and supports.			✓	
Check masonry chimneys.	✓			

### INTERIOR SURFACES

	Spring	Fall	Annually	As Required
Check all joints in ceramic tile, laminated plastic, and similar surfaces.	✓	✓		
Check grouting around tubs, showers, and sinks.	✓	✓		

### FLOORS

Check for wear and damage, particularly where one material meets another.			✓	
Evaluate for replacement or refinishing.			✓	

### ELECTRICAL SYSTEM

Check condition of lamp cords, extension cords, and plugs—replace at first sign of wear or damage.	✓	✓		
Check exposed and overhead wiring for damage and missing insulation. Replace or repair as needed.			✓	
If fuses blow or breakers trip frequently, call an electrician to locate the cause and make repairs.				✓
If you feel a slight shock or tingling from touching any appliance, disconnect it and make repairs.				✓
Test Ground Fault Circuit Interrupters.	✓	✓		

### HEATING AND COOLING SYSTEM

Clean or change any air filters.				✓
Clean dirt and dust from around furnaces.	✓	✓		
Have heating and cooling system checked by a qualified serviceperson.	✓			
Remove window air conditioners for winter.		✓		
Service humidifier and/or dehumidifier.			✓	

### PLUMBING SYSTEM

Check flush valves, faucets, hose bibbs, and supply and drainage piping, including those in basement and/or crawl space.			✓	
Check septic tank.				✓
Check water heater.			✓	

### GROUNDS AND YARD

Drain outside water lines and hoses.		✓		
Clean areawells, window wells, and storm drains.	✓	✓		✓
Check driveways and sidewalks for cracks, yard for settlement and soil erosion.	✓			
Check safety and reversing mechanism on electric garage door operators, adjust if needed.			✓	